

IN THE CLAIMS

Please amend claims 1-10, 15, 18, and 20 as indicated below.

Please add new claims 22-44 as indicated below.

1. (Currently Amended) A method comprising:
- coding of each tile of an input codestream into a plurality of layers;
- outputting, as a part of a first pass, a plurality of packets of said each tile ~~as part of~~ to an output codestream as a first complete tile-part, the first complete tile-part representing a first layer of the plurality of layers;
- storing remaining layers of said each tile in a buffer; and
- outputting, as a part of a second pass, additional packets of said each tile from the remaining layers as a second complete tile-part if remaining unused bandwidth of the output codestream is available based on a desired bandwidth of the output codestream.
2. (Currently Amended) The method defined in Claim 1 wherein selection of packets of the plurality of packets for inclusion in the first complete tile-part is based on total bitrate bandwidth for the first and second passes.
3. (Currently Amended) The method defined in Claim 1 wherein number of the additional packets output to the output codestream is determined based on a bitrate of the output codestream ~~selection of packets of the plurality of packets for inclusion in the first complete tile-part is based on size of the buffer.~~

4. (Currently Amended) An apparatus comprising:

means for coding of each tile of an input codestream into a plurality of layers;

means for outputting, as a part of a first pass, a plurality of packets of said each tile as ~~part of~~ to an output codestream as a first complete tile-part, the first complete tile-part representing a first layer of the plurality of layers;

means for storing remaining layers of said each tile in a buffer; and

means for outputting, as a part of a second pass, additional packets of said each tile from the remaining layers as a second complete tile-part if remaining unused bandwidth of the output codestream is available based on a desired bandwidth of the output codestream.

5. (Currently Amended) The apparatus defined in Claim 4 wherein selection of packets of the plurality of packets for inclusion in the first complete tile-part is based on total ~~bandwidth~~ bitrate for first and second passes.

6. (Currently Amended) The apparatus defined in Claim 4 ~~wherein selection of packets of the plurality of packets for inclusion in the first complete tile-part is based on size of the buffer~~ number of the additional packets output to the output codestream is determined based on a bitrate of the output codestream.

7. (Currently Amended) An article of manufacture comprising at least one recordable media storing executable instructions thereon which, when executed by a processing device, cause the processing device to:

code of each tile of an input codestream into a plurality of layers;

output, as a part of a first pass, a plurality of packets of said each tile ~~as part of~~ to an output codestream as a first complete tile-part, the first complete tile-part representing a first layer of the plurality of layers;

store remaining layers of said each tile in a buffer; and

output, as a part of a second pass, additional packets of said each tile from the remaining layers as a second complete tile-part if remaining unused bandwidth of the output codestream is available based on a desired bandwidth of the output codestream.

8. (Currently Amended) The article of manufacture defined in Claim 7 wherein selection of packets of the plurality of packets for inclusion in the first complete tile-part is based on total ~~bandwidth~~ bitrate for first and second passes.

9. (Currently Amended) The article of manufacture defined in Claim 7 ~~wherein selection of packets of the plurality of packets for inclusion in the first complete tile-part is based on size of the buffer~~ number of the additional packets output to the output codestream is determined based on a bitrate of the output codestream.

10. (Currently Amended) A method comprising:  
compressing a bitstream to create an original compressed codestream;  
performing rate control on the original compressed codestream to create a new compressed codestream in response to a request by selecting a number of layers to remain in the codestream, including a parser using a packet structure containing a selection flag and setting a selection flag for each packet of the original codestream to a predetermined value to indicate whether said each packet is to be included in the new compressed codestream,

wherein the packet structure is a member of an array of packet structures, each of the packet structures in the array corresponding to each of the layers of each tile in the original compressed codestream.

11. (Original) The method defined in Claim 10 further comprising:

computing a total number of bytes for the new compressed codestream based on a desired rate;

adding the total number of bytes associated with at least one layer, starting with the most important layer and adding a new layer until the total number of bytes associated with the one or more layers whose bytes have been added is equal to or greater than the number of bytes desired or bytes for all layers have been added;

subtracting bytes associated with a last added layer when the total number of bytes associated with the one or more layers whose bytes have been added is greater than the number of bytes desired; and

setting selection flags of packets associated with layers whose bytes are included in the total number of bytes.

12. (Original) The method defined in Claim 10 further comprising writing the new codestream based on whether selection flags of packets for the original compressed codestream are set.

13. (Original) The method defined in Claim 10 further comprising reading packets in sequential order from the compressed codestream based on order information indicated in a marker.

14. (Original) The method defined in Claim 13 wherein the order information comprises progression order information and the marker comprises a COD marker.

15. (Currently Amended) A apparatus comprising:

means for compressing a bitstream to create an original compressed codestream;

means for performing rate control on the original compressed codestream to created a new compressed codestream in response to a request by selecting a number of layers to remain in the codestream, including a parser to use a packet structure containing a selection flag and to set a selection flag for each packet of the original codestream to a predetermined value to indicate whether said each packet is to be included in the new compressed codestream to control whether individual layers are included in the new compressed codestream,

wherein the packet structure is a member of an array of packet structures, each of the packet structures in the array corresponding to each of the layers of each tile in the original compressed codestream.

16. (Original) The apparatus defined in Claim 15 further comprising:

means for computing a total number of bytes for the new compressed codestream based on a desired rate;

means for adding the total number of bytes associated with at least one layer, starting with the highest level layer and adding a new layer until the total number of bytes associated with the one or more layers whose bytes have been added is equal to or greater than the number of bytes desired or bytes for all layers have been added;

means for subtracting bytes associated with a last added layer when the total number of bytes associated with the one or more layers whose bytes have been added is greater than the number of bytes desired; and

means for setting selection flags of packets associated with layers whose bytes are included in the total number of bytes.

17. (Original) The apparatus defined in Claim 15 further comprising means for writing the new codestream based on whether selection flags of packets for the original compressed codestream are set.

18. (Currently Amended) The apparatus defined in Claim ~~[[10]]~~ 15 further comprising means for reading packets in sequential order from the compressed codestream based on order information indicated in a marker.

19. (Original) The apparatus defined in Claim 18 wherein the order information comprises progression order information and the marker comprises a COD marker.

20. (Currently Amended) An article of manufacture comprising one or more recordable media having executable instructions stored thereon which, when executed by a machine, cause the machine to:

compress a bitstream to create an original compressed codestream;

perform rate control on the original compressed codestream to create a new compressed codestream in response to a request by selecting a number of layers to remain in the codestream, including a parser using a packet structure containing a selection flag and

setting a selection flag in each packet of the original codestream to a predetermined value to indicate whether said each packet is to be included in the new compressed codestream,

wherein the packet structure is a member of an array of packet structures, each of the packet structures in the array corresponding to each of the layers of each tile in the original compressed codestream.

21. (Original) The article of manufacture defined in Claim 20 further comprising instructions which, when executed by the machine, cause the machine to:

compute a total number of bytes for the new compressed codestream based on a desired rate;

add the total number of bytes associated with at least one layer, starting with the highest level layer and adding a new layer until the total number of bytes associated with the one or more layers whose bytes have been added is equal to or greater than the number of bytes desired or bytes for all layers have been added;

subtract bytes associated with a last added layer when the total number of bytes associated with the one or more layers whose bytes have been added is greater than the number of bytes desired; and

set selection flags of packets associated with layers whose bytes are included in the total number of bytes.

22. (New) The method defined in Claim 1 wherein the first complete tile-part is transmitted in a first bitrate and the second complete tile-part is transmitted in a second bitrate, wherein each of the first and second bitrates is less than an average desired bitrate of the output codestream.

23. (New) The method defined in Claim 22 wherein a total of the first and second bitrates is equal to or greater than the average desired bitrate of the output codestream.

24. (New) The method defined in Claim 1 wherein during the second pass, the second complete tile-part receives more additional packets from the remaining layers stored in the buffer for tiles having higher distortion than tiles having lower distortion.

25. (New) The apparatus defined in Claim 4 wherein the first complete tile-part is transmitted in a first bitrate and the second complete tile-part is transmitted in a second bitrate, wherein each of the first and second bitrates is less than an average desired bitrate of the output codestream.

26. (New) The apparatus defined in Claim 24 wherein a total of the first and second bitrates is equal to or greater than the average desired bitrate of the output codestream.

27. (New) The apparatus defined in Claim 4 wherein during the second pass, the second complete tile-part receives more additional packets from the remaining layers stored in the buffer for tiles having higher distortion than tiles having lower distortion.

28. (New) The article of manufacture defined in Claim 7 wherein the first complete tile-part is transmitted in a first bitrate and the second complete tile-part is transmitted in a second bitrate, wherein each of the first and second bitrates is less than an average desired bitrate of the output codestream.

28. <sup>29</sup> (New) The article of manufacture defined in Claim <sup>28</sup> 27 wherein a total of the first and second bitrates is equal to or greater than the average desired bitrate of the output codestream.

29. <sup>30</sup> (New) The article of manufacture defined in Claim 7 wherein during the second pass, the second complete tile-part receives more additional packets from the remaining layers stored in the buffer for tiles having higher distortion than tiles having lower distortion.

30. <sup>31</sup> (New) The method defined in Claim 10 wherein the packet structure further comprises:

- a first portion to store a starting pointer a respective layer of a tile; and  
a second portion to store a size of the respective layer of a tile.

31. <sup>32</sup> (New) The method defined in Claim <sup>31</sup> 30 wherein the packet structure further comprises a third portion to store a tile number for identifying a tile that the respective packet structure associates with.

32. <sup>33</sup> (New) The method defined in Claim <sup>32</sup> 31 wherein the packet structure further comprises:

a fourth portion to store resolution information of a tile that the respective packet structure associates with;

a fifth portion to store component information of a tile that the respective packet structure associates with;

a sixth portion to store layer information of a tile that the respective packet structure associates with; and

a seventh portion to store precinct information of a tile that the respective packet structure associates with.

33. (New) The method defined Claim ~~32~~<sup>33</sup> wherein the resolution, component, layer, and precinct information is used to identify a progression order of the respective layer of a tile.

34. (New) The apparatus defined in Claim 15 wherein the packet structure further comprises:

a first portion to store a starting pointer a respective layer of a tile; and

a second portion to store a size of the respective layer of a tile.

35. (New) The apparatus defined in Claim ~~34~~<sup>35</sup> wherein the packet structure further comprises a third portion to store a tile number for identifying a tile that the respective packet structure associates with.

36. (New) The apparatus defined in Claim ~~35~~<sup>36</sup> wherein the packet structure further comprises:

a fourth portion to store resolution information of a tile that the respective packet structure associates with;

a fifth portion to store component information of a tile that the respective packet structure associates with;

a sixth portion to store layer information of a tile that the respective packet structure associates with; and

a seventh portion to store precinct information of a tile that the respective packet structure associates with.

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37.<sup>30</sup> (New) The apparatus defined Claim ~~35~~<sup>30</sup> wherein the resolution, component, layer, and precinct information is used to identify a progression order of the respective layer of a tile.

38.<sup>39</sup> (New) The article of manufacture defined in Claim 20 wherein the executable instructions further cause the machine to write the new codestream based on whether selection flags of packets for the original compressed codestream are set.

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39.<sup>40</sup> (New) The article of manufacture defined in Claim 20 wherein the executable instructions further cause the machine to read packets in sequential order from the compressed codestream based on order information indicated in a marker.

40.<sup>41</sup> (New) The article of manufacture defined in Claim ~~39~~<sup>40</sup> wherein the order information comprises progression order information and the marker comprises a COD marker.

41.<sup>42</sup> (New) The article of manufacture defined in Claim 20 wherein the packet structure further comprises:

a first portion to store a starting pointer a respective layer of a tile; and

a second portion to store a size of the respective layer of a tile.

42. <sup>43</sup> (New) The article of manufacture defined in Claim <sup>42</sup> 41 wherein the packet structure further comprises a third portion to store a tile number for identifying a tile that the respective packet structure associates with.

43. <sup>44</sup> (New) The article of manufacture defined in Claim <sup>43</sup> 42 wherein the packet structure further comprises:

a fourth portion to store resolution information of a tile that the respective packet structure associates with;

a fifth portion to store component information of a tile that the respective packet structure associates with;

a sixth portion to store layer information of a tile that the respective packet structure associates with; and

a seventh portion to store precinct information of a tile that the respective packet structure associates with.

44. <sup>45</sup> (New) The article of manufacture defined Claim <sup>44</sup> 43 wherein the resolution, component, layer, and precinct information is used to identify a progression order of the respective layer of a tile.